

Claims

What is claimed is:

1. A gas turbine plant comprises:

a high-temperature gas-cooled reactor which warms a coolant by thermal energy being obtained by nuclear fission of clad fission products in coated-particle fuels;

“n”-shaft first gas turbines that are rotated by the coolant being warmed by the high-temperature gas-cooled reactor and share same shafts with compressors compressing the coolant;

a second gas turbine that is rotated by the coolant being discharged from the first gas turbine serving as a last stage after rotating each of the “n”-shaft first gas turbines and shares a same shaft with a generator performing electrical power generation operation; and

“n-1” pieces of bypass valves that have each of the “n-1”-shaft first gas turbines bypassed to the coolant, respectively, excluding the first gas turbine in a first stage being close to the high-temperature gas-cooled reactor, among the “n”-shaft first gas turbines;

wherein, during start-up, by controlling a lift of the “n-1” pieces of bypass valves, each of the “n”-shaft first gas turbines has rotating speed thereof increased up to a rated rotating speed shaft by shaft sequentially, starting from the first gas turbine in a first stage.

2. A gas turbine plant as described in Claim 1:

wherein, the bypass valve has the second gas turbine bypassed.

3. A gas turbine plant comprises:

a high-temperature gas-cooled reactor which warms a coolant by thermal energy being obtained by nuclear fission of clad fission products in coated-particle fuels;

a high pressure gas turbine which is rotated by the coolant being warmed by the high-temperature gas-cooled reactor and shares a same shaft with a high pressure compressor compressing the coolant;

a low pressure gas turbine which is rotated by the coolant being discharged from the high pressure gas turbine and shares a same shaft with a low pressure compressor compressing the coolant;

a gas turbine for electrical power generation which is rotated by the coolant being discharged from the low pressure gas turbine and shares a same shaft with a generator performing an electrical power generation; and

a bypass valve which has the low pressure gas turbine bypassed to the coolant;

wherein, during start-up, first, a rotating speed of the high pressure compressor is increased up to a rated rotating speed by adjusting a lift of the bypass valve after charging the coolant with the bypass valve fully closed, and then next, with the bypass valve fully closed, a rotating speed of the low pressure compressor is increased up to a rated rotating speed.

4. A gas turbine plant as described in Claim 3:

wherein, the bypass valve has the gas turbine for electrical power generation bypassed.